Abstract of the Disclosure

This method for analyzing blood enables one to isolate, detect, enumerate and confirm under magnification the presence or absence of fragments of target analyte cancer cells which are circulating in blood. The analysis is performed in a sample of centrifuged anticoagulated whole blood. The analysis of the presence or absence of fragments of cancer cells relies on the detection of external or internal binding sites which are known to be present only in or on tumorous cancer cells. Fluorophors with distinct wavelength emissions are coupled with antibodies, or other binding moieties such as complementary nucleotide sequences, which antibodies are directed against the epithelial cell fragment membrane binding sites, such as internal or external surface epitopes on the cell fragments, or internal binding sites on cell organelles; and which nucleotide sequences are complementary to portions of cell fragment RNA and/or DNA. The labled binding agents are humoric or soluble in the blood sample. The labeled fluorometric binding site-specific materials may be coupled to small plastic beads which have a density or specific gravity that is preferably greater than the specific gravity or density of the red blood cells. The target cell fragments are less dense than the red cells, and typically have the same density or specific gravity as the platelets or white blood cells in the blood sample. Any of the labeled beads which couple with target cell analyte fragments will have a density or specific gravity that is less than the red cells in the blood sample. Thus cell fragment/labeled bead couples will gravitate into an area in the centrifuged blood sample which area is somewhere above the centrifuged red cell layer. The detection of the labeled target analyte/particle couples can be performed in situ in the centrifuged blood sample either visually or photometrically.